



Environmental damage costs from fossil electricity generation in China, 2000 similar to 2003

Author(s): Zhang QY, Wei YM, Chen YX, Guo H
Year: 2007
Journal: Journal of Zhejiang University. Science. A. 8 (11): 1816-1825

Abstract:

Electricity consumption increases rapidly with the rapid development of China. The environmental damage costs of electricity generation are very important for both policy analysis and the proper management of the environment. A method was developed in this work to estimate gross environmental damage costs according to emission inventory and environmental cost factors, and to extend the costs from provincial to national level with population density. In this paper, sulfur dioxide (SO₂), nitrogen oxides (NO_x), particulate matter less than 10 µm in diameter (PM₁₀), and carbon dioxide (CO₂) from fossil fired power plants over 6000 kW were selected as index pollutants to quantify the environmental costs of damages on human health and global warming. With the new developed method, environmental damage costs, caused by 3 types of fired power plants in 30 provinces and 6 economic sectors during the years 2000 to 2003, were evaluated and analyzed. It can be seen that the calculated total national environmental damage costs of electricity have rapidly increased from 94930.87 x 10⁽⁶⁾ USD in 2000 to about 141041.39 x 10⁽⁶⁾ USD in 2003, with an average annual growth rate of 14.11%. Environmental damage costs of SO₂, NO_x, PM₁₀, and CO₂ are 69475.69 x 10⁽⁶⁾, 30079.29 x 10⁽⁶⁾, 28931.84 x 10⁽⁶⁾, and 12554.57 x 10⁽⁶⁾ USD and account for 49.26%, 21.33%, 20.51%, and 8.90% of total environmental costs in fossil electricity generation, respectively. With regard to regional distribution, external costs caused by fossil electricity generation are mainly concentrated in the more populated and industrialized areas of China, i.e., the Eastern Central and Southeastern areas.

Source: <http://dx.doi.org/10.1631/jzus.2007.A1816>

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Unspecified Exposure

Air Pollution: Particulate Matter, Other Air Pollution

Air Pollution (other): NO_x;SO₂;CO₂

Geographic Feature:

resource focuses on specific type of geography

Rural, Urban

Climate Change and Human Health Literature Portal

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Cost/Economic

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Short-Term (

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content